

Name of the Ph.D. Scholar: Vineet Kumar Sharma

Name of the supervisor: Dr. S. Zeeshan Hussain

Name of the Co-supervisor: Dr. S.A.M. Rizvi

Department: Computer Science

**Title of the Thesis: The Development of Software Technique to Improve
the Performance of a Distributed System.**

ABSTRACT

Today, the software technologies have evolved to the extent that now a customer can have free and open source software available in the market. Unlike other things a customer purchases, the software applications bought don't belong to the specified user; instead the customer becomes a licensed user, means that customer purchases the right to use that software on a single computer, but can't put copies on other machines or pass that software among the colleagues.

Software piracy is the illegal distribution and/or reproduction of software applications for commercial or personal use. Whether software piracy is deliberate or not, it is illegal and punishable by law. The major reasons of software piracy include the high cost and inefficient usage of the software resources and hence it also became the business of some unethical people who had chosen piracy as their jobs. Various software companies are inclined towards the research of techniques to handle this problem of piracy. Many defense mechanisms have been devised but the hobbyists or the black market leaders, so called Software Pirates have always found a way out of it.

Distributed computing refers to the application design paradigm in which the program, the data they process and the actual computation are spread over the network, either to leverage the processing power of multiple computers or due to the inherent nature of the application. In a true distributed system, each machine enjoys the resources available in the whole network. These resources may be of hardware resources, software resources and data resources. With the highly

increasing technological trends and due to the availability of the good hardware configuration in very cheaper price, we are more concerned for the optimal uses of the software resources in a network.

Achieving the optimal utilization of the software resources in a given network has been a challenge for us from the very beginning of the software distribution. The present study is an attempt to deduce an efficient and intelligent technique where software resources may be distributed and utilized in an optimal way in its network. Solution of this kind of problem not only enhances the performance of the system but also tries to control vigil over software distribution and uses besides restricting the software piracy also as a major breakthrough.

First of all the study critically examines the existing defense mechanisms- the static defense mechanisms and identifies the impossibility to prevent the duplication of digital data. This research work would like to present a dynamic defense mechanism where software piracy becomes difficult and examines social and technical challenges associated with handling software piracy prevention. The goal of this study is to design, implement and empirically evaluate a comprehensive framework for software piracy prevention. This study aims at developing a dynamic defense mechanism that makes it difficult to pirate. Furthermore it also enables a fine grained control over distributed software. By this philosophy the organization can not use the software on the number of computers, exceeding the number of license purchased but it provides an ethical way for optimal use of that software in the network of the organization by dynamic software and license key management which morally and socially build an environment for the prevention of software piracy.

The future of secure software distribution is dynamic software license key management. Node locked license, server license, site license, corporate license, rental license, lease license, pay per use license are various licensing models which are already available in the market and gaining popularity.

The presented research work significantly argues about the challenges in static licensing model and tries to find a generalized solution where software publisher and user are both benefitted by adopting the dynamic licensing technique.